Marietta City Schools

District Unit Planner

Grade 3 Science

Theme	*Unit 2 Under the Sun*	**Unit duration**	*14 weeks*

Mastering Content and Skills through INQUIRY (Establishing the purpose of the Unit): *What will students learn?*

GSE Standards

Georgia Standards:

S3L1. Obtain, evaluate, and communicate information about the similarities and differences between plants, animals, and habitats found within geographic regions (Blue Ridge Mountains, Piedmont, Coastal Plains, Valley and Ridge, and Appalachian Plateau) of Georgia.

a. Ask questions to differentiate between plants, animals, and habitats found within Georgia's geographic regions.

b. Construct an explanation of how external features and adaptations (camouflage, hibernation, migration, mimicry) of animals allow them to survive in their habitat.

c. Use evidence to construct an explanation of why some organisms can thrive in one habitat and not in another.

S3P1. Obtain, evaluate, and communicate information about the ways heat energy is transferred and measured.

a. Ask questions to identify sources of heat energy. (Clarification statement: Examples could include sunlight, friction, and burning.)

b. Plan and carry out an investigation to gather data using thermometers to produce tables and charts that illustrate the effect of sunlight on various objects. (Clarification statement: The use of both Fahrenheit and Celsius temperature scales is expected.)

c. Use tools and everyday materials to design and construct a device/structure that will increase/decrease the warming effects of sunlight on various materials. (Clarification statement: Conduction, convection, and radiation are taught in upper grades.)

Unit Objectives:

After a study about plants and animals in the habitats of Georgia Regions, students will

- construct an explanation for why some organisms thrive in a habitat while others do not.
- transfer their knowledge of heat from organisms to non-living objects.
- understand that 'heat' refers to the transfer of energy from objects at a higher temperature (hotter) to objects at a lower temperature (cooler) to balance the temperature.
- conduct experiments where heat transfers are measured as a change in temperature.
- explain that heat is produced in many ways, such as burning, rubbing, and mixing certain substances with one another.

· conduct experiments with lights and sunlight to warm objects.
· explain why an object's temperature increase depends on how intense the light striking its surface is, how long the light shines on the object, and how much of the light is absorbed.
· understand that the amount of light absorbed by an object is affected by the object's properties, including color and material.
· understand that changes in environments can happen naturally or are influenced by humans.
· understand that plants and animals live in a variety of habitats, and that change in those habitats affects the organisms living there.
· give examples to support the idea that some environmental changes are good, some are bad, and some are neither good nor bad.

Unit Phenomena: **https://www.georgiascienceteacher.org/phenomena**
This website will take you to a bank of phenomena. Put the title into the Search Box to find a quick video or image. If using a video, show it without the sound. Let the students discuss what they see in the video – what they notice. Next, have them ask questions about what they have seen. Revisit these questions throughout the unit.
Alligator Allocation
Bears in Atlanta
Water Strider Walking on Water
Color and Heat Absorption

Page Keeley Probes: ***Click here for an introduction to Page Keeley Probes***
These probes can be used as phenomena. They are intended to elicit student understanding about science concepts. Starting a unit or lesson with a probe will help you uncover misconceptions and see what students already know about a topic. Using a probe at the beginning of a lesson and then at the end of the lesson serve the purposes of pretesting and then formatively evaluating student thinking. Below is a list of probes from Page Keeley's book Uncovering Student Ideas in Science, that are appropriate for this unit. This book has been purchased for your grade level by the Office of Academic Achievement and can be found in your media center.
· Objects and Temperature (Volume 1)
· Turning the Dial (Volume 2)
· Warming Water (4)
· Adaptation (Volume 4)

Science & Engineering Practices:	**Disciplinary Core Ideas:**	**Crosscutting Concepts:**
• Asking questions and defining problems • Planning and carrying out investigations • Developing and using models • Analyzing and interpreting data • Engaging in argument from evidence	● Georgia Habitats ● Animal Adaptation ● Conservation of Energy and Energy Transfer	• Systems and System Models • Cause and Effect • Structure and Function

Misconceptions:
· All plants and animals can live in any part of the state.
· Animals and plants can adapt to changes in a habitat.
· Heat and temperature are the same thing.
· Heat energy can be lost. Insulators make things hot or cold.

- Heat is generated from materials such as wool.
- Students may believe that heat and cold are two different things. In reality, cold is the absence of heat, and is not an entity unto itself.
- Students may believe that heat is a substance or material. In fact, heat is a form of energy that affects materials, but is not a material itself

Math/ELA Connections/STEM Connections
ELAGSE3RI1: Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
ELAGSE3RI3: Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.
ELAGSE3RI4: Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.
ELAGSE3RI5: Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic quickly and efficiently.
ELAGSE3W2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
ELAGSE3W4: With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose.
ELAGSE3W7: Conduct short research projects that build knowledge about a topic.
ELAGSE3W8: Recall information from experience or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.
ELAGSE3SL1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly.
ELAGSE3SL4: Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.
MGSE3.MD.1 Tell and write time to the nearest minute and measure elapsed time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram, drawing a pictorial representation on a clock face, etc.

STEM:
Create a Tracking System for Migrating Animals – This Discovery Education Science Techbook STEM challenge asks students to research ways in which technology assists scientists in tracking migratory animals. Students will create a 2-D model of a tracking device.
Build a Solar Oven – This can be done as a guided science activity or as an Engineering Design Challenge. If using this activity as an EDC, provide problem (All of the ovens at the Cookie Factory are broken.), challenge (Your challenge is to use the existing materials to create a way to harness the sunlight to cook a batch of cookies), and the materials. Students use what they have learned to create a solar oven.

Discovery Education Science Techbook Resources: (*You will need to be logged into Discovery Education using your Google credentials to access these resources*) You will find center activities on the **Engage** page of each Techbook unit.

Heat Energy Interactive
Melt-Off Exploration
Sound, Heat, and Light
Create an Animal Habitat
Characteristics of Habitats Interactive

Hands-on Activities

Light and Heat

Heat Through Burning

Virtual Learning Journey: Georgia Forests

Sort Activity

Hands-On Activity: Thermal Energy Transfer

Hands-On Activity: Design and Build an Insulated Bottle

Learning to Use Scientific Tools: Celsius Thermometers

Hands-On Lab: Playing with Dough

Use the AIMS 3rd grade Life Science Book in your building to access the following lessons. The lessons, descriptions and page numbers of the lessons that fit with our GSE standards are provided below. Contact your Instructional Coach or Science Coordinator if you do not have access to the AIMS books.

Page #	Lesson Title	Lesson Description
84	Bird Beaks and Fowl Feet	Students match descriptions of different bird beaks and feet illustrations and create imaginary birds that match certain characteristic.
99	Wonderful Webbed Feet	Students learn about and make models of frog feet.
141	Poster Wild: Animal Reports	Students create a poster about an animal that lives in Georgia.
14	Solar Mitts	Students will use their sense of touch to compare how different colors absorb heat energy.
19	Hot Pockets	Students explore the effects of color on the absorption of heat energy.
27	A Test of Temperatures	Students design a test to discover whether energy from the sun heats Earth's materials.
38	Hot Chocolate	Students observe the pattern of melting of chocolate chips.
46	Heat From Friction	Students rub 2 surfaces together to produce heat.
49	Hot Stuff	Students identify sources of heat.
59	A Heated Mix Up	Students mix water and plaster of Paris and graph temperature changes.
68	Cartoons 'n' Cotton	Students explore the effects of cotton insulation.
74	Polar Bears	Students design ways to insulate an ice cube.
80	All Wrapped Up	Students determine the best insulated jar.
89	Evening Out Temperatures	Students work with 3 different water temperatures and graph results.

Essential Questions	
Factual— Explain the difference between plant and animal habitats found within Georgia's regions. How do external features and adaptations of animals allow them to survive in their habitat? Identify different sources of energy and explain how they differ. **Inferential—** With evidence explain why some organisms thrive in one habitat and not in another. What is the difference between temperature and heat? **Critical Thinking-** How does sunlight affect objects made of different materials?	
Tier II Words- High Frequency Multiple Meaning	**Tier III Words-** Subject/ Content Related Words
Blue Ridge Mountains, Piedmont, Coastal Plains, Valley and Ridge, Appalachian Plateau, heat, similarities, differences	camouflage, hibernation, migration, mimicry, organism, Fahrenheit, Celsius, survival, internal, external, functions, environment, absorb
Assessments	
Question Bank Teachers have access to the question bank via a link in the Grade 3 Schoology Course. All 3rd Grade Science Summative Assessments are located in the Science 3 AMP Schoology Course.	

Objective or Content	Learning Experiences	Differentiation Considerations
S3L1. Obtain, evaluate, and communicate information about the similarities and differences between plants, animals, and habitats found within geographic regions (Blue Ridge Mountains, Piedmont, Coastal Plains, Valley and Ridge, and Appalachian Plateau) of Georgia. S3P1. Obtain, evaluate, and communicate information about the ways heat energy is transferred and measured.	Habitats in Georgia GaDOE Instructional Segment This learning segment will expand on student's knowledge of Georgia habitats and geographic regions. While learning about the plants and animals living in each region, students will learn how heat affects the organisms and nonliving objects in these habitats. Heat GaDOE Instructional Segment This learning segment will focus on heat as a source of energy. Students will look around the classroom or home to locate items that give off heat including people and pets. Students will use thermometers to learn more about materials that conduct heat and those that insulate.	Student Choice Performance Tasks Reflection and Goal Setting Learning Stations Choice Boards Formative Probes Science Journaling Multi-sensory activities Assistive Technology Flexible Grouping Multiple Means of Representation

Recommended High Quality Complex Text
Wetlands By Quinn M. Arnold
Looking at Landforms By Ellen Mitten
Exploring the States: Georgia The Peach State By Lisa Owings
What's Great About Georgia? By Andrea Wang

Harnessing Power From the Sun By Niki Walker

What Does Sunlight Do? By Jennifer Boothroyd

Our Sun Brings Life By Conrad Storad